

REMARKS

Applicants have amended claims 1 and 7 and provided the Declaration of Dr. Terrence Thomas. Applicants respectfully request reconsideration in view of the amendments, Declaration and the following remarks.

Applicants amended claims 1 and 7 to clarify that the decrease in removal rate refers to the polishing removal rate. The Example at paragraphs 33 to 36 provides a basis the amendment. Applicants respectfully submit that the amendments enter no new matter.

Kurata et al. disclose the use of polyvinyl alcohol to control static etch rate, not decrease copper removal rate during polishing. In particular, Applicants have provided the Declaration of Dr. Thomas, an industry expert with several years experience, to establish that the Kurata et al. teach that polyvinyl alcohol decreases copper removal rate and to clarify that static etch control and polishing removal rate are different features related to chemical mechanical polishing.

The action rejects claims 1 to 10 over Tsuchiya et al. (U.S. Pat. Pub. No. 2002/0095872) in view of Kurata et al. (U.S. Pat. Pub. No. 2003/0219982). Tsuchiya et al. disclose a thickener in an amount of 0.001 to 0.05 wt% polyvinylpyrrolidone or polyvinyl alcohol, but fail to disclose the benefits achieved with a combination of polyvinylpyrrolidone and polyvinyl alcohol. In addition, Kurata et al. teach the use of polyvinyl alcohol as an etching suppressant, but fail to disclose the benefits achieved with a combination of polyvinylpyrrolidone and polyvinyl alcohol. Furthermore, Table 1 of Kurata et al. teaches that polyvinyl alcohol increases copper removal rate—Declaration of Dr. Terrence Thomas. Applicants' amended claims reflect that increasing the weight ratio of the polyvinyl alcohol to the polyvinylpyrrolidone decreases the removal rate of the non-ferrous interconnect. In addition, the action states that "It further would be inherent that increasing the weight ratio of the PVA and PVP would decrease the removal rate of the

semiconductor substrate because any change in the etching suppression effect, would inherently have an effect on the removal rate.” Applicants do not understand this statement or agree that the reference inherently suggests the claimed benefit achieved with a combination of PVA and PVP. Thus, since Kurata et al. teach that polyvinyl alcohol increases removal rate, it teaches away from Applicants’ claimed composition where increasing PVA decreases interconnect removal rate. Applicants respectfully submit that since the references fail to disclose the benefits achieved with a combination of polyvinylpyrrolidone and polyvinyl alcohol and Kurata et al. teach away from using polyvinyl alcohol to reduce interconnect removal rate, claims 1 to 10, as amended, are not obvious in view of the combined references.

Claim 2—Tsuchiya et al. disclose an overlapping polyvinylpyrrolidone range, but not with the claimed combination of polyvinylpyrrolidone and polyvinyl alcohol.

Claim 3—Tsuchiya et al. disclose silica, but not with the claimed combination of polyvinylpyrrolidone and polyvinyl alcohol.

Claim 4—Kurata et al. disclose an overlapping polyvinyl alcohol range, but not with the claimed combination of polyvinylpyrrolidone and polyvinyl alcohol.

Claim 5—Tsuchiya et al. disclose an overlapping polyvinylpyrrolidone range, but not with the claimed combination of polyvinylpyrrolidone and polyvinyl alcohol.

Claim 6—the combined references do not teach or suggest the claimed ratio of polyvinylpyrrolidone to polyvinyl alcohol.

Claim 7—see arguments to amended claim 1.

Claim 8—the combined references fail to disclose the benefits achieved with a combination of polyvinylpyrrolidone and polyvinyl alcohol and teach away from using polyvinyl alcohol to reduce interconnect removal rate.

Claim 9—Kurata et al. disclose polishing with a low dielectric rate, but not with the claimed combination of polyvinylpyrrolidone and polyvinyl alcohol.


Claim 10—Tsuchiya et al. disclose polishing with a high removal rate for copper and they do disclose the claimed combination of polyvinylpyrrolidone and polyvinyl alcohol.

Applicants respectfully submit that the application is in condition for allowance and request reconsideration. If a telephone call would expedite prosecution, please call me at (302) 283-2136.

Respectfully submitted,

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Date



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